

REMARKS / DISCUSSION OF ISSUES

The present amendment is submitted in response to the Office Action mailed July 21, 2010. In view of the remarks to follow, reconsideration and allowance of this application are respectfully requested.

Status of Claims

Claims 1-8, 10-12 and 14 and 16-31 remain in this application. Claims 1, 3, 5-8, 10-12, 17 and 20 have been amended. Claim 15 has been canceled. Claims 22-31 have been added.

Claim Rejections under 35 USC 103

In the Office Action, Claims 1-2, 4 and 18-21 stand rejected under

- 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,051,340 (“Tyan”) in view of JP 06-060440, and
- 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,051,340 (“Tyan”) in view of U.S. Patent No. 6,219,330 (“Ahn”).

Applicants respectfully traverse the rejections.

Claims 1-2, 4 and 18-21 are allowable

As admitted by the Examiner, the Office Action fails to address all of the limitations of claim 1. In particular, the Office Action fails to address the limitations associated with the first and second interface layers. Upon recognizing this deficiency, Applicant’s Attorney called the Examiner to discuss the omission during a telephone conference conducted on Monday, October 4, 2010. The Examiner admitted to inadvertently failing to address all of the limitations in the rejection of record. In lieu of issuing another Office Action, the Examiner pointed out to the Applicant’s Attorney that it would not be necessary to re-issue the Office Action given that the rejection of the first and second interface layers was properly addressed in the Response to Arguments section of the previous Office Action. In particular, the final rejection issued by the Office, mail date 2/25/010. See, ***Response to Arguments***. In

the Final Rejection, it was stated in the Response to Arguments that while the Applicant argues that the reference combination does not provide for a first and second dielectric layer formed between the substrate and phase change layer, the '556 (Depuydt) reference discloses a dielectric (interface) layer between the substrate and phase change layer which be formed to a thickness of 5 to 200 nm. Applicant claims a first interface layer up to 100 nm and a second interface layer up to 100 nm. Applicant's combined interface thickness can be from 15 nm to a 200 nm maximum, which is encompassed by the range disclosed in the '556 reference. While the reference does not disclose two layers, two interface layers of the same dielectric material (as disclosed by applicant) would yield a single layer of the material. In other words, one 200 nm layer of the material, according to the '556 reference, is equivalent to two 100 nm layers of the material, according to Applicant's claimed invention. For the record, Applicants duly note the impropriety of the instant action, in light of the discussion above.

Independent Claim 1 has been amended herein to better define Applicant's invention over the combination of Tyan and JP 06-060440. More particularly, claim 15 is herewith cancelled, without prejudice, and claim 1 has been amended to incorporate the subject matter of now-cancelled claim 15. It is respectfully submitted that independent Claim 1, as herewith amended, now recites limitations and/or features which are not disclosed by the combination of Tyan and JP 06-060440. Therefore, the cited portions of Tyan and JP 06-060440 do not anticipate claim 1, because the cited portions of Tyan and JP 06-060440, in any reasonable combination, do not teach every element of claim 1. For example, the cited portions of Tyan and JP 06-060440 do not disclose or suggest, "a metal heat sink layer sandwiched between said substrate layer and said first interface layer or second interface layer", as recited in claim 1.

It is respectfully submitted that claim 1, is not obvious in light of Tyan, JP 06-060440, Ahn and Depuydt. Therefore, claim 1 is allowable and claims 2 and 4 are allowable, at least by virtue of their respective dependence from claim 1.

With reference now to method Claim 18 which is rejected in the instant action over the combination of Tyan and JP 06-060440. In Applicant's previous response, it was argued with great specificity, why claim 18 is neither taught or suggested by the cited art. For the

record, it is noted that the instant Office Action does not address those arguments. Accordingly, the arguments made in Applicant's previous response, are re-asserted herein.

In the instant office action, the rejection of Claim 18 is improper for being non-specific. That is, the rejection merely asserts that Tyson teaches that a phase change material is exposed in a pattern (to form pits and grooves), developed with an alkali, nickel-plated, and formed into a stamper. Applicants respectfully note that Claim 18 recites five (5) detailed steps for manufacturing a stamper for replication a high-density relief structure. These steps include (1) an illuminating step, (2) a rinsing step, (3) a sputter-deposition step, (4) a step of galvanically growing the sputter deposited layer and (5) a separating step. It is respectfully submitted that Tyson does not teach at least one or more of Applicant's five (5) steps.

The five (5) steps of Claim 18 are repeated here:

- *illuminating a master substrate as claimed in claim 1 with a modulated focused radiation beam,*
- *rinsing the illuminated master substrate layer with a developer, being one of analkaline or an acid liquid, preferably selected of the group of solutions of NaOH, KOH, HCL and HNO₃ in water, such that a desired relief structure results,*
- *sputter-deposition of a metallic layer, in particular a Nickel layer,*
- *galvanically growing the sputter-deposited layer to the desired thickness forming a stamper,*
- *separating the master substrate from the stamper.*

It is respectfully submitted that the cited references **do not teach at least four of the five steps recited above.**

Step 2

It is respectfully submitted that Tyan does not teach at least the second step of *rinsing the illuminated master substrate layer with a developer, being one of analkaline or an acid liquid, preferably selected of the group of solutions of NaOH, KOH, HCL and HNO₃ in*

water, such that a desired relief structure results. Instead, Tyan teaches in accordance with the first and second examples, that the disk is rinsed in **distilled water**. Tyan teaches in accordance with the third example that the disk is rinsed sequentially in a 0.05 wt % Triton X-100 solution and in distilled water. Tyan teaches in accordance with the remaining examples that the disk is rinsed sequentially in various weights (e.g., 0.025, 0.05) wt % of **a Fluorad FC-99 solution and in distilled water**. Thus, Applicant submits that Tyan does not teach at least the step of: *rinsing the illuminated master substrate layer with a developer, being one of analkaline or an acid liquid, preferably selected of the group of solutions of NaOH, KOH, HCL and HNO3 in water, such that a desired relief structure results.*

Step 3

Further, it is respectfully submitted that Tyan also does not teach at least the step of: *sputter-deposition of a metallic layer, in particular a Nickel layer*. Instead, Tyan teaches in accordance with the first example that a thin-film, about 70 nm in thickness on a glass support, of Sb-Sn-In alloy with atomic composition of 60%-25%-15% was prepared by RF-sputtering. Tyan also teaches in accordance with the ninth example that the polymer-coated disk replicate then had a thin film of the Sb-Sn-In alloy sputtered onto it to provide reflectivity and conductivity for subsequent optical microscopy and SEM observation. Thus, Applicant submits that this step is neither disclosed nor suggested by Tyan.

Step 4

Applicant further submits that Tyan does not teach at least the step of: *galvanically growing the sputter-deposited layer to the desired thickness forming a stamper, sputter-deposition of a metallic layer, in particular a Nickel layer*. It is respectfully submitted that Tyan is silent with regard to this step.

Step 5

Applicant further submits that Tyan does not teach at least the step of *separating the master substrate from the stamper*. Tyan discloses in part with regard to example 9 that “the polymer film was crosslinked via UV exposure and the disks were separated at the metal alloy:polymer interface. Applicant submits that the separation taught in **Tyan is not directed**

to separating the master substrate from the stamper. Thus, Applicant submits that this step is neither disclosed nor suggested by Tyan.

It is further submitted that JP 06-060440 does not cure the deficiencies of Tyson. JP 06-060440 is merely cited for disclosing the use of protective layers with phase-change mask layers which may be formed of PMMA.

Accordingly, since the cited references, alone and in any reasonable combination, do not disclose or suggest the elements of Applicant's claim 18. Accordingly, Applicants respectfully request that the rejection under 35 USC 103(a) with respect to independent Claim 18 be withdrawn.

Further, since claims 19-21 are dependent on Claim 18, they too are believed to be patentably distinct over Tyan for at least the reasons given above for Claim 18. Accordingly, it is respectfully requested that the rejection under 35 USC 103(a) with respect to dependent Claims 19-21 be withdrawn.

Claim 3 is allowable

In the Office Action, Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,219,330 ("Ahn") in view of JP 06-060440. Applicants respectfully traverse the rejection. Claim 3 has been amended by deleting the specific formula for the phase change alloy. Claim 3 as amended, now recites, "A master substrate as claimed in claim 1, wherein said recording material is a Sn-Ge-Sb-alloy material." Irrespective of whether Ahn and/or JP 06-060440 teach the elements of claim 3, claim 3 is allowable at least by virtue of its respective dependence from claim 1.

Claims 5, 8-11 and 13-14 are allowable

In the Office Action, Claims 5, 8-11 and 13-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tyan in view of U.S. Patent No. 5,051,340 ("DePuydt"). Applicants respectfully traverse the rejections.

As explained above, the cited portions of Tyan do not disclose or suggest each and every element of claim 1 from which claims 5, 8-11 and 13-14 depend. DePuydt does not disclose each of the elements of claim 1 that are not disclosed by Tyan. DePuydt is merely cited for teaching that it is known to provide a dielectric and cap layer on either side of the mask layer when forming a stamper. Thus, the cited portions of Tyan and DePuydt, individually or in combination, do not disclose or suggest each and every element of claim 1. Hence, for at least the same reasons given for Claims 1, Claims 5, 8-11 and 13-14 are believed to recite statutory subject matter under 35 USC 103(a) and claims 5, 8-11 and 13-14 are allowable, at least by virtue of their respective dependence from claim 1.

Claims 6-7 are allowable

In the Office Action, Claims 6-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tyan in view of JP 06-060440 and further in view of U.S. Patent No. 4,732,844 (“Ota”). Applicants respectfully traverse the rejections.

As explained above, the cited portions of Tyan and JP 06-060440 do not disclose or suggest each and every element of claim 1 from which claims 6-7 depend. Ota does not disclose each of the elements of claim 1 that are not disclosed by Tyan and JP 06-060440. Thus, the cited portions of Tyan, JP 06-060440 and Ota, individually or in combination, do not disclose or suggest each and every element of claim 1. Hence, for at least the same reasons given for Claims 1, Claims 6-7 are believed to recite statutory subject matter under 35 USC 103(a) and claims 6-7 are allowable, at least by virtue of their respective dependence from claim 1.

Claims 16-17 are allowable

In the Office Action, Claims 15-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tyan in view of U.S. Patent No. 6,709,801 (“Miyamoto”). Claim 15 has been canceled without prejudice. Applicants respectfully traverse the remainder of the rejections.

As explained above, the cited portions of Tyan do not disclose or suggest each and every element of claim 1 from which claims 16-17 depend. Miyamoto does not disclose each

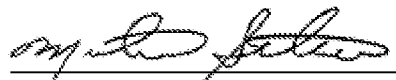
of the elements of claim 1 that are not disclosed by Tyan. Thus, the cited portions of Tyan and Miyamoto, individually or in combination, do not disclose or suggest each and every element of claim 1. Hence, for at least the same reasons given for Claims 1, Claims 16-17 are believed to recite statutory subject matter under 35 USC 103(a) and claims 16-17 are allowable, at least by virtue of their respective dependence from claim 1.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1-8, 10-12, 14, and 16 -31 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Mike Belk, Esq., Intellectual Property Counsel, Philips Electronics North America, at 914-333-9463.

Respectfully submitted,



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